MODULE V

DISPOSAL IN LANDFILLS

V.A. APPLICABILITY

V.A.1. The Permittee may dispose of hazardous wastes in the Mixed Waste Landfill Cell, and in future cells, when permitted, as shown on Drawing 9905-01, Mixed Waste Embankment Site Layout, in Attachment II-11, *Facility Drawings*.

V.A.2 The combined total capacity of the Mixed Waste Landfill Cell shall be 963,020 cubic yards. Maximum capacities of all phases of approved construction and future construction are listed in Table V-1of this Module.

V.A.3. The Permittee may modify this permit to construct other Mixed Waste Landfill Cells and phases on undeveloped land within the Permittee's 540 acres of Section 32, Township 1S, Range 11W. Construction of future cells shall be subject to Executive Secretary approval.

V.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

V.B.1. The Permittee may dispose of the wastes identified in Condition III.B. in the Mixed Waste Landfill Cell, and future mixed waste cells at the Facility.

V.B.2. The Permittee shall be prohibited from disposing at the Facility any hazardous waste not included in Condition V.B.1 of this Permit.

V.B.3. The Permittee shall be prohibited from disposing at the Facility the wastes identified in Condition III.C. of this Permit.

V.C. GENERAL DESIGN AND CONSTRUCTION OF LANDFILL CELLS AND PHASES

V.C.1. The Permittee shall construct landfill cells in accordance with the following conditions:

V.C.1.a. The Permittee shall install liners with a leachate collection and removal system for each cell in accordance with the design plans and drawings contained in Attachment II-11, *Facility Drawings.*

V.C.1.b. The Permittee shall submit to the Executive Secretary, prior to the commencement of construction of any new landfill cell, landfill cell specific plans, drawings, and design details to include the following:

V.C.1.b.i. Cell specific hydrology, geotechnical investigation and stability analysis;

V.C.1.b.ii. Specifications for all components of the landfill cell; and

V.C.1.b.iii. Cell specific construction quality assurance plans for all aspects of construction.

V.C.1.c. A modification of this permit shall be required for construction of additional cells.

V.C.2. The Permittee shall construct landfill cell phases in accordance with the following conditions:

V.C.2.a. The Permittee shall install liners with a leachate collection and removal system for each phase in accordance with the design plans and drawings contained in Attachment II-11, *Facility Drawings.*

V.C.2.b. The Permittee shall submit to the Executive Secretary, prior to the commencement of construction of any new landfill cell phase, landfill cell phase specific plans, drawings, and design details including the following:

V.C.2.b.i. Specifications for all components of the landfill cell phase; and

V.C.2.b.ii. Phase specific construction quality assurance project plans for all aspects of construction.

V.C.2.b.iii The scope of this historical data review shall include Cell Design and Construction Methods, Construction Technical Specifications, Synthetic Liner Specifications, Construction Quality Assurance Plan, Seismology, Slope Stability & Liquefaction Potential, Erosion Protection Design (Flooding Analysis and Rock Cover), Liner Loading Calculations, Settlement and Cover Cracking, Slippage of Liners, Liner and Leachate Collection System Compatibility, Run-Off Calculations, Infiltration Potential and Hydrogeologic Monitoring Specifications.

V.C.2.b.iv Envirocare may submit topic-specific certifications that previous landfill cell construction phase's historical data reviews are adequate and no new information has become available to require additional data review.

V.C.2.c. A Class 1 modification of this permit shall be required for construction of additional cell phases, provided the design and construction details follow those of permitted phases.

V.C.3. Changes in design or construction details shall require a modification, in accordance with UAC R315-3-4.2, UAC R315-4-1.5 and Conditions I.F.10 and I.F.11 of this Permit.

V.C.4. The Permittee shall not commence disposal of hazardous waste in a newly constructed portion of a Mixed Waste Landfill Cell or an existing cell being modified at the Facility until the requirements of Condition I.F.11 are met.

V.C.5. Construction of each landfill cell shall follow the approved Attachment II-9, *Construction Quality Assurance/Quality Control Manual (CQAM).*

V.C.6. For each landfill cell, a test pad shall be constructed to demonstrate the appropriate materials of construction, construction equipment, and construction techniques that shall be used for full-scale construction.

V.C.7. The data from a test pad may be used for more than one cell where design, materials, equipment, and construction techniques are all identical. Test pads shall be constructed and operated in accordance with Attachment II-9, *CQAM*.

V.C.8. The Permittee shall construct Mixed Waste Landfill Cells in accordance with approved drawings contained in Attachment II-11, *Facility Drawings*. The construction may differ only by minor routine construction changes. These changes shall be noted on the as-built drawings and shall be justified in the construction documentation. The construction documentation shall be submitted to the Executive Secretary no later than 90 days after each phase of construction of the landfill is completed.

V.C.9. The Permittee shall construct all Mixed Waste Landfill Cells with a liner system that, at a minimum, consists of the following (in ascending order) as described in Attachment II-9, *CQAM*:

V.C.9.a. A composite liner comprised of three feet of compacted clay with a hydraulic conductivity no more than 1×10^{-7} cm/sec, and a primary High Density Polyethylene (HDPE) liner;

V.C.9.b. A Secondary Leachate Collection\Leak Detection System consisting of a drainage net;

V.C.9c. A secondary HDPE liner;

V.C.9d. A Primary Leachate Collection\Leak Detection System consisting of a drainage net and a geotextile fabric;

V.C.9.e. A two-foot protective soil cover;

V.C.9.f. A tertiary HDPE liner; and

V.C.9.g. A Tertiary Leachate Collection System consisting of a drainage net and a geotextile fabric.

V.C.10. The minimum nominal liner thickness for each HDPE liner shall be 60 mils.

V.C.11. A minimum of two feet of protective cover consisting of native sand, clay, or waste without deleterious material.

V.C.12. Protective bedding material above the upper and below each HDPE liner shall be either a layer of synthetic drainage net and sand, or clay, or a combination thereof.

V.C.13. The clay liner for each landfill cell shall have a minimum thickness of three feet and be compacted to a permeability of no more than 1.0×10^{-7} cm/sec as verified by in-situ and laboratory testing.

V.C.14. The clay to be used for the liner shall be amended if necessary (e.g. through the addition of sodium tripolyphosphate) to lower its permeability.

V.C.15. For each Mixed Waste Landfill Cell or phase, the Permittee shall design a leachate detection/collection/removal system that shall have a minimum slope of one percent at construction as described in Attachment II-9, *CQAM*.

V.C.16. The Permittee shall construct all leachate detection/collection/removal layers to have an in-situ hydraulic transmissivity of 5×10^{-4} m^2/sec or greater.

V.C.17. Where a protective soil layer is required, a filter fabric shall be placed over the drainage net to prevent clogging.

V.C.18. Sumps shall be adequately located and designed to efficiently collect and provide for removal of leachate.

V.C.19. The Permittee shall install all leachate detection, collection, and removal systems in accordance with the Construction/Installation Procedures in Attachment II-9, *CQAM*.

V.C.20. The Permittee shall inspect the landfill construction in accordance with Attachment II-9, *CQAM*.

V.C.21. The Permittee shall perform all construction inspections under the direction of a Construction Quality Assurance Officer (CQAO). This person shall be independent of the design, engineering and cell construction personnel and functions. The CQAO shall be a qualified Utah registered Professional Engineer.

V.C.22. Waste placement activities shall be performed in accordance with the Permittee's Radioactive Material License No. UT2300249.

V.C.23. The Permittee shall contract with a qualified independent firm to perform an annual audit of the facility's CQA/QC program. The auditor shall audit a minimum of 15% of the Permittee's documentation for mixed waste placement activities and 15% of embankment construction. Each audit shall include observations of field activities that occur while the auditor is on-site. The auditors report shall be submitted to the Executive Secretary annually, no later than March 31st.

V.C.24. The Permittee shall construct final cover in accordance with an approved Cover Construction Design Engineering Report and Attachment II-7, *Closure Plan*.

V.C.24.a. The final cover shall consist of the following layers (bottom to top):

V.C.24.a.i. two-feet of compacted clay material with a permeability less than or equal to 5×10^{-8} cm/sec;

V.C.24.a.ii. a 60 mil HDPE geomembrane;

V.C.24.a.iii. a 12 oz. Geotextile protective layer;

V.C.24.a.iv. a six-inch granular drainage layer;

V.C.24.a.v. a 6 oz. Geotextile;

V.C.24.a.vi. a one-foot layer of sacrificial soil (freeze-thaw barrier);

V.C.24.a.vii. a six-inch granular filter layer; and

V.C.24.a.viii. a one-and-one-half-foot rock erosion barrier.

V.C.24.b. Prior to construction, the Permittee shall conduct shear testing of the synthetic interfaces within the cover system. Laboratory testing results shall be submitted to the Executive Secretary for approval at least 30 days prior to cell construction using the material.

V.C.24.b.i. Shear testing shall be conducted on the following interfaces: HDPE/compacted clay, HDPE/geotextile, and geotextile/granular drainage layer.

V.C.24.b.ii. Shear testing shall be conducted in accordance with ASTM D-5321. Other testing methods shall require Executive Secretary approval.

V.C.24.b.iii. Each interface shear test shall consist of four samples; one sample tested at the low end of the normal stress range, two samples tested in the middle of the normal stress range, and one sample tested at the high end of the normal stress range. The extra sample in the middle of the normal stress range shall be a quality control sample to verify test performance.

V.C.24.b.iv. Material approval shall require an interface friction angle greater than or equal to 16" and an adhesion/cohesion greater than or equal to 50 pounds per square foot.

V.D. GENERAL OPERATING CONDITIONS

V.D.1. The Permittee shall not exceed the final design elevation by more than ten feet during cap construction.

V.D.2. This exceedance shall be allowed only after notification of closure pursuant to Condition II.N.3 of this Permit.

V.D.3. This exceedance shall be allowed only for the purpose of working with power equipment to gain final contours.

V.D.4. The unit shall meet the final waste contours and rated capacity within 90 days of the first exceedance of elevation.

V.D.5. The Permittee shall repair any damage to the liner caused during landfill operations according to repair procedures in Attachment II-9, *CQAM*, or as approved by the Executive Secretary.

V.D.6. The Permittee shall operate each Mixed Waste Landfill Cell in such a manner that the vertical depth of leachate on any part of the liner system, including the sump(s), shall not exceed one foot. The Permittee shall measure liner leakage rate for the lower two liners for each leak detection system. The liner leakage rate to the second-lowest liner for each sump shall not exceed 15 gallons per acre per day. The liner leakage rate to the lowest liner for each sump shall not exceed ten gallons per acre per day. For calculation purposes, the assumed area for each sump is equal to one acre. These calculations of gallons per acre per day may be averaged over the weekly measurements.

V.D.7. The top leachate collection and removal system shall be operated such that the vertical depth of leachate on any part of the liner system, including the sump, shall not exceed one foot, during each day that any mixed waste operations are taking place. The Permittee shall inspect the upper pipe and measure leachate if present once each operating day and transfer all removable leachate, and manage in accordance with Module IV of this Permit. All leachate measurements and leachate volumes removed shall be documented in the operating records.

V.D.8. The Permittee shall cease open waste handling activity at the Mixed Waste Landfill Cell when the wind speed is in excess of 35 mph for a period longer than five minutes.

V.D.9. The Permittee shall document in the operating record that the activity was stopped during periods when the wind speed exceeded 35 mph for a period longer than five minutes.

V.D.10. The Permittee shall not land dispose of restricted hazardous waste that does not meet the treatment standards of UAC R315-13-1 (40 CFR 268.41 and 268.43 incorporated by reference) for every applicable waste code.

V.E. LAND DISPOSAL RESTRICTIONS

V.E.1. The Permittee shall not in any way dilute a restricted waste or the residual from treatment of a restricted waste as a substitute for treatment to achieve compliance with UAC R315-13-1 (40 CFR Part 268 Subpart D incorporated by reference), to circumvent an effective date or to otherwise avoid a prohibition in UAC R315-13-1 (Subpart C of Part 268 incorporated by reference).

V.E.2. For any waste restricted under UAC R315-13-1 the Permittee may apply for case-by-case extensions to:

V.E.2.a. The effective dates in accordance with UAC R315-13-1;

V.E.2.b. Petitions to allow disposal of restricted wastes granted under UAC R315-13-1; or

V.E.2.c. Variances from a treatment standard in accordance with UAC R315-13-1.

V.E.3. All requirements of Condition V.E. shall be fulfilled prior to disposal of any restricted wastes by the Permittee under these sections. Upon request, the Permittee shall provide the Executive Secretary with all applicable submissions, additional information, etc., necessary to support the position of an extension, petition, or variance.

V.E.4. The Permittee shall ensure compliance with all applicable requirements specified in UAC R315-13-1 (40 CFR Part 268, Subpart C incorporated by reference). Failure to meet these conditions may be grounds for termination of the permit in accordance with Condition I.D.

V.E.5. The Permittee shall not place in the Mixed Waste Landfill Cells, any hazardous wastes restricted under UAC R315-13-1 which do not meet the treatment standards specified in UAC R315-13-1, unless:

V.E.5.a. Such wastes are subject to a national variance;

V.E.5.b. A petition in accordance with Condition V.E.2.b. and UAC R315-13-1 is approved by the Executive Secretary;

V.E.5.c. An extension in accordance with Condition V.E.2.a. and UAC R315-13-1 is approved by the Executive Secretary; or

V.E.5.d. A treatment standard variance in accordance with Condition V.E.2.c. and UAC R315-13-1 is approved by the Executive Secretary.

V.E.5.e. The waste is being placed in a MACRO Vault constructed and managed in accordance with Attachment II-1-5, Macroencapsulation Plan.

V.E.6. The Permittee shall not dispose of any hazardous waste having free liquids in landfill cells.

V.E.7. The Permittee shall comply with all applicable requirements in UAC R315-13-1 for the land disposal of listed hazardous wastes.

V.E.8. The Permittee shall comply with all applicable requirements specified under UAC R315-13-1 for the land disposal of debris.

V.E.9. The Permittee shall comply with all applicable treatment standards for the disposal of wastes in accordance with UAC R315-13-1.

V.E.10. The Permittee is neither restricted by nor exempted from further requirements of RCRA Section 3004 and changes to UAC R315-13-1 that are identified as self-implementing regulations or requirements, as a result of these permit conditions.

V.E.11. The Permittee shall comply with all applicable requirements specified in UAC R315-2-9(g), UAC R315-50-7 and UAC R315-13.

V.E.12. The Permittee shall comply with regulations that promulgate new waste codes.

V.E.13. The Permittee shall perform a review of the Waste Profile Record to ensure that any non-hazardous radioactive waste placed into the Mixed Waste Landfill Cell is compatible with the liner system, and other disposed waste.

V.F. RECORDKEEPING AND REPORTING

V.F.1. The Permittee shall submit to the Executive Secretary on a quarterly basis (no later than 20 days following the end of each quarter), leachate collection/removal volumes for each collection or leak detection sump.

V.F.2. The report describing the presence of liquid in the leak detection systems referenced in Condition V.F.1. shall include the total amount of liquid discovered in each system, an estimate of the leakage rate, and any other information deemed necessary by the Permittee or the Executive Secretary.

V.F.3. If the Permittee discovers the presence of liquid in the second-lowest leak detection system in quantities greater than 15 gallons per acre per day; or if the Permittee discovers the presence of liquid in the lowest leak detection system in quantities greater than ten gallons per acre per day; the Permittee shall notify the Executive Secretary within 72 hours of discovery.

V.F.4. Within ten days of detecting leachate in excess of volumes listed in V.F.3. above, in either of the two lowest leak detection systems, the Permittee shall submit a Remediation Plan, in accordance with Condition V.F.3., to the Executive Secretary, outlining the steps to be taken to correct the problem. Upon approval by the Executive Secretary, the Permittee shall implement the plan.

V.F.5. The Permittee shall collect leachate and shall manage the leachate in accordance with the requirements for generators of hazardous waste in UAC R315-5 before placing it in the evaporation tank(s) for treatment or shall transfer the leachate directly to the permitted evaporation tanks.

V.F.6. The Permittee shall treat the leachate in the permitted evaporation tanks. When sludge is removed from evaporation tanks, the sludge shall be solidified, treated if necessary, and disposed of in a permitted landfill cell.

V.F.7. The Permittee shall cover or otherwise manage the landfill to control wind dispersal of particulate matter, in accordance with the provisions of Attachment II-10, *Plan for Controlling Wind Dispersal*.

V.F.8. If hazardous waste subject to land disposal restrictions is treated, the Permittee shall comply with all applicable requirements specified in UAC R315-13-1.

V.F.9. The Permittee shall maintain Paint Filter Liquid Test or inspection results for LDR wastes in the operating record.

V.F.10. Test results for wastes treated subject to land disposal restrictions shall be kept in the operating record in accordance with Condition II.M.

V.F.11. The Permittee shall comply with all applicable requirements specified in UAC R315-8-17 and UAC R315-8-18.

V.F.12. When disposing of an on-site generated hazardous waste subject to land disposal restrictions, the Permittee shall maintain documentation to support the certification claim that such waste meets the treatment standards of UAC R315-13-1. These

documents shall be kept as a part of the operating record in accordance with Condition II.M.

V.F.13. On or before March 31st, the Permittee shall submit to the Executive Secretary the Annual As-Built Report for the Mixed Waste Landfill Cell. The report shall include the following items certified by a qualified Utah Registered Professional Engineer:

V.F.13.a. Drawings that detail east to west cross-sections of the Mixed Waste Landfill Cell through each constructed sump comparative to the cell design profile;

V.F.13.b. Drawings that detail east to west cross-sections of the Mixed Waste Landfill Cell at the location of cap shoulders comparative to the cell design profile;

V.F.13.c. Drawings that detail north to south cross-sections of the Mixed Waste Landfill Cell at the centerline and north to south cross-sections of the Mixed Waste Landfill Cell at the location of cap shoulders comparative to the cell design profile;

V.F.13.d. Drawings that detail the plan view of the constructed cells in the Mixed Waste Landfill Cell. The plan view drawing shall show the location of each cross-section and contain planar coordinates and elevations relevant to the constructed/construction features of the Mixed Waste Landfill Cell based on the site coordinate system.

V.F.13.e. Drawings scales shall be clearly identified and scaled to allow data to be scaled from the drawings.

V.F.14. The Permittee shall submit an electronic copy of the drawings identified in Condition V.F.13. in DFX file language.

V.G. MANAGEMENT OF RUN-ON/RUN-OFF FACILITIES

V.G.1. The Permittee shall manage run-on/run-off in accordance with Attachment V-1, *Mixed Waste Run-On/Run-Off Berms.*

V.H. INSPECTION SCHEDULES AND PROCEDURES

V.H.1. The Permittee shall conduct inspections of Mixed Waste Landfill Cell as outlined in Attachment II-3, *Site Inspection Plan*.

V.I. CELL LOCATION SURVEYING

V.I.1. The Permittee shall track waste disposed of in the Mixed Waste Landfill Cell in accordance with Attachment III-2, *Waste Identification and Tracking Plan*.

V.J. CLOSURE AND POST-CLOSURE CARE

V.J.1. The Permittee shall conduct closure and post-closure activities in accordance with the following conditions:

V.J.1.a. At final closure of the landfill, or upon closure of any cell, the Permittee shall follow the procedures in the approved Attachment II-7, *Closure Plan*;

V.J.1.b. After final closure, the Permittee shall follow the plans and procedures in the approved Attachment II-8, *Post-Closure Plan*.

V.K. SPECIAL REDUCTION REQUIREMENTS FOR EMPTY CONTAINERS

V.K.1. The Permittee shall not dispose of any empty containers in the Mixed Waste Landfill Cell unless they are crushed, or similarly reduced in volume to the maximum practical extent before placement in accordance with the Permittee's Radioactive Material License.

TABLE V-1

PHASE	SUMP DESIGNATION	APPROVED FOR DISPOSAL	CAPACITY (Cubic Yards)
1A	1A	April 24, 1992	35,942
1A	2A	April 24, 1992	55,264
1B	1B	February 16, 1996	35,943
1B	2B	February 16, 1996	55,114
II	3B	January 15, 1999	60,651
II	4B	January 15, 1999	60,724
II	5B	October 13, 1999	60,799
II	6B	October 13, 1999	60,886
III	3A	February 16, 2001	62,078
III	4A	February 16, 2001	62,691
III	5A	February 16, 2001	61,781
III	6A	February 16, 2001	60,682
IV	7A	June 24, 2004	60,693
IV	7B	June 24, 2004	60,774
IV	8A	May 26, 2005	60,653
IV	8B	May 26, 2005	60,654
V	9A		55,096
V	9B		55,096
	10A		35,941
	10B		35,941
		Total Capacity	1,097,401 cubic yards